



amateur radio

Vol. 36, No. 4

APRIL

1968

30c

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"AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910

APRIL 1968
Vol. 36, No. 4

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Advertising copy should be forwarded direct to the printers by first of each month.

Publishers:

VICTORIAN DIVISION W.I.A.

Reg. Office: 478 Victoria Parade, East Melbourne, Vic., 3002.

Printers:

"RICHMOND CHRONICLE," Phone 42-2419.
Shakespeare Street, Richmond, Vic., 3121.



All matters pertaining to "A.R." other than subscriptions, should be addressed to:

THE EDITOR,

"AMATEUR RADIO,"

P.O. BOX 38,
EAST MELBOURNE, VIC., 3002.

Acknowledgments will be sent following the Committee meeting on the second Monday of each month. All Sub-Editors should forward their articles to reach "A.R." before the 28th of each month. Any item received after the Committee meeting will be held over until the next month. Publication of any item is dependent upon space availability, but in general about two months may elapse before a technical article is published after consideration by the Publications Committee.



Members of the W.I.A. should refer all enquiries regarding delivery of "A.R." direct to their Divisional Secretary and not to "A.R." direct. Non-members of the W.I.A. should write to the Victorian Division, C/o. P.O. Box 38, East Melbourne. Two months' notice is required before a change of mailing address can be effected. Readers should note that any change in the address of their transmitting station must, by P.M.G. regulation, be notified to the P.M.G. in the State of residence; in addition, "A.R." should also be notified. A convenient form is provided in the "Call Book".



Direct subscription rate is \$3.50 a year, post paid, in advance. Issued monthly, first of the month. February edition excepted.

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REGION III. CONGRESS

Easter 1968 and the Federal Convention in Sydney will have more than the usual significance for the Wireless Institute of Australia for, by the time this is read, final preparations will have been made to receive visitors from the National Amateur Societies of Japan, Philippines, New Zealand and U.S.A.

Sydney and the New South Wales Division will be hosts for the inaugural meeting of the Region III I.A.R.U. Congress which was initiated by Federal Executive following discussions by Federal Council at Hobart last year.

In many respects this meeting can be likened to the initial meeting of what became the I.A.R.U. nearly 45 years ago when nine nations met in Paris to discuss the formation of an international association of Amateurs. Although techniques have changed, the original concepts are still as true today as in 1924—"The affecting of co-operative agreements between the National Amateur Radio Societies of the world on matters of common welfare; the advancement of the radio art; and the representation of two-way Amateur Radio communication interests in international communication conferences."

However, with the formation of the I.A.R.U. chapters, national societies in other parts of the world have found that mutual co-operation and unified action within their own Regions can lead to a better understanding and possible solution of the problems facing the Amateur Service—convention in Region I, i.e. Europe-Africa, and in Region II, i.e. the Americas have become, in recent years, regular affairs with the status of Amateur Radio being the better for these meetings.

Region III—our part of the world—is unique. We are isolated from our neighbours by history and geography: we are part of a Region with a small Amateur population, yet it is significant that three national societies are sending two delegates to this, the inaugural meeting of Region III. It is unfortunate that other societies have not been able to be with us, but we understand their problems.

What then are the reasons for this spate of activity and what does this Congress hope to achieve? The reasons for the activity have been clearly stated in detail in earlier issues of this journal, but let us refresh your memory.

At the next international conference, the Amateur Radio Service, like all other users of the radio frequency spectrum, may be required to justify its frequency allocations. Whilst the Service has been well supported by some countries who recognise the benefits derived, this support can be expected to continue only so long as the Service compares favourably with other contenders for frequency space.

The Amateur Service has not received unqualified support from all countries, many of them claiming that other radio services are of greater importance and that allocations to the Amateur Service should be reduced or discontinued. This problem is of particular concern to new

and developing countries which find that few frequencies are available to them for their varied communication needs.

It is, therefore, vitally important that all administrations briefing delegates for an international conference have a sound understanding of the values of the services they are asked to support.

FEDERAL COMMENT

The basic, immediate, and ultimate aim of this Congress, and indeed the preoccupation of any Regional Congress, is to promote, establish and maintain continuing Amateur activity in all countries so that the recognition of Amateur technological and sociological contributions are justification for continued existence.

How this can be done will be the immediate concern of the delegates in Sydney at this Congress, but it can be expected that discussion will include matters of finance, establishment of technical and educational assistance, and other details vital in the implementation of such a far reaching and important goal.

For our part, we see no alternative to a plan for continuing support to our neighbouring Amateur Societies. It is a plan that does not come cheaply and is made more urgent by the belief that some I.T.U. conferences dealing with frequency allocations will be on a Regional basis.

If a Region III I.T.U. conference was held now, the fate of presently held Amateur assignments in this Region could well be in jeopardy because Amateur orientated administrations would be in the minority—the threat to our allocations could well be within our own Region!

We have established an I.T.U. fund to send an observer to any I.T.U. conference dealing with Amateur affairs, but this is not enough. With the formation of a Regional association this Easter we must continue our personal contacts, and in the same way that Japan, New Zealand and the Philippines were able to send delegates to Australia, we too, must continue the work started. We must be prepared to finance and send W.I.A. representatives to future gatherings held elsewhere in this Region, and at the same time finance and implement Region III assistance programmes.

PETER D. WILLIAMS, VK9ZJ,
Asst. Federal Sec., W.I.A.

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SINGLE LOOP TRIBAND CUBICAL QUAD ELEMENT

Triband Aerial Principle and Some Applications

H. F. RUCKERT,* VK2AOU

WITH the present sunspot cycle near its peak, DX is again possible on 20, 15 and 10 metres. About fifteen years ago only those few Amateurs could successfully work DX who had plenty of real estate for an antenna farm or had enough engineering ability and cash to build a tower with three yagi beams in Christmas tree fashion stacked on top of each other.

With the last sunspot maximum a number of economy style triband aeri-als were invented, known by the call sign of the designers: W3DZZ, DL1FK, G4ZU, various versions of these aeri-als and the one the writer described, which is called VK2AOU beam in Europe. All these beams were described by the proud owners of large full size aeri-als as "compromise", but we are now convinced that some are a very good compromise, and top DXCC results have been achieved with them. In the meantime about 70% of all successful DX contacts are being made with these shortened beams.

The cubical quad has in recent years joined the list of excellent DX aeri-als, but its popularity is only limited by engineering problems involved to put up and rotate such a monster spider web. A mini-quad would in many cases be the answer, especially if three-band resonance could be had with one wire loop per element.

Experience has shown that an effective aerial is more important than transmitter power (within reasonable limits). Not only the measured or calculated aerial gain is important. This figure would not explain sufficiently the DX results obtainable with a beam compared with a ground plane or di-

pole. The beam brings less noise, less QRM and, if high enough, places the radiation in the right direction to obtain maximum reflected power from the ionosphere.

Knowing that the successful DXer needs some sort of beam, the problem amounts in most cases to finding a reasonable compromise between DX ability of the aerial on the one side and weight and size reduction on the other side. We like to live in peace with the XYL, the neighbours and the local council. That means our aerial must not be considered as dangerous or as an eye sore and it must not hang over the fence of our 50 x 150 ft. block half of which is already covered by buildings. With these limitations in mind, to which we have to add cost and difficulties of erecting the supporting structure and the rotor, most of us will not be in the position to put up a full size 20 metre beam (yagi) or a cubical quad. A compromise, economy style or mini aerial is therefore in most cases the only way out.

The following description of a Triband Aerial Principle may be of particular interest because it can be applied to wire dipoles, ground planes, yagi beams and cubical quad aeri-als. The writer developed the principle about ten years ago. It was published in a number of magazines (see References) and in the antenna book by DM2ABK.

For the benefit of those who were not with Amateur Radio ten years ago, the principle and its development will be briefly repeated, and the second part describes aeri-als which were developed in recent years by DJ2UT and the writer. Early critics have been satisfied by now that this aerial works. VK2AOU

won 1st place for N.S.W. phone section 1957 VK-ZL Contest, VK2AOU won 1st place for Australia, phone section, in the W.A.E.D.C. Contest in 1958, DL-8NU made DXCC with 20 watts with the VK2AOU beam, and DL3GY worked 255 countries in 1966 with this beam.

About one hundred of these aeri-als are being used in central Europe, most of which were built by DJ2UT.† These aeri-als were two and three element yagis with the special triband tuning sections in the element centres using a single co-ax. feed line. A number of ground plane aeri-als using this tuning method are also in use, and cubical quads will follow soon.

Interesting features are that these aeri-als do not respond to harmonics, they have only the desired resonances. They are only shortened at the lowest operating frequency, full size or more at the medium frequency and much longer at the highest frequency. They have no heavy blocking tuned circuits near the element ends. These are the main differences comparing this design with the now popular W3DZZ aerial, which are also shortened at the medium frequency, and which respond to undesired frequencies.

THE MULTIBAND TUNING PRINCIPLE

Fig. 1

Dipole features:

Wavelength: λ .

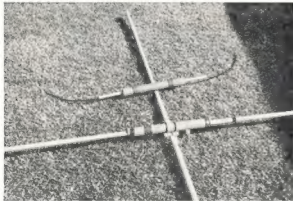
Fundamental resonance freq.: f_n .

Dipole length: $\lambda/2$.

f_n (Mc.) = $300 \div \lambda$ (m).

The dipole has the usually unwanted harmonic resonances at $3f_n$, $5f_n$, etc.

* Bertille Rd., Beverly Hills, N.S.W., 2208.
† Waltried Sommer, 7609 Denslingen, Kandel Str. 33, Germany.



Radiator element mounted to boom of VK2AOU's three element triband beam. Note the coil tuning rings. Director tuning section lies behind, not yet mounted. Tuning section from DJ2UT. The cable type tuning capacitors of the director tuning section can be seen.



Beam 30 feet up on not yet cranked up steel mast. Junior op. on mast.



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Fig. 2
Dipole electrically lengthened with loading coil—
 $f_m < f_n$.

Fig. 3
Dipole electrically shortened with capacitor at centre—
 $f_m > f_n$.
Both these loaded dipoles have also odd harmonic resonances.

Fig. 4
The series tuned circuit behaves similar to the dipole, but only the fundamental resonance is found, as can be shown with a grid dip meter (g.d.m.).

Fig. 5
The parallel tuned circuit has only the fundamental resonance. f_r is in both cases:

$$f_r = \frac{1}{2\pi\sqrt{L \times C}}$$

FIG.1. DIPOLE at f_{r1} .

FIG.2. DIPOLE at f_{r2} .

FIG.3. DIPOLE at f_{r3} .

FIG.4.

FIG.5.

TWO-FREQUENCY TUNED CIRCUIT (Multiband Tank)

Fig. 6
The parallel combination of a series and parallel tuned circuit has been popular in transmitters, because with suitable components a frequency range of 3 to 30 Mc. could be tuned without changing the coils. This circuit shows always two simultaneous resonances, f_m and f_n , which are not necessarily harmonically related to each other.

FIG.6.

FIG.7.

Fig. 7
Two-band Aerial: The dipole replaces the series tuned circuit shown at Fig. 6. L1 and C1 may have any suitable form. C1 may be a piece of cable of the required capacity, but it is not necessary to tune this cable to a particular frequency (G4ZU claim, switching stub). The resonance frequency f_n of L1 and C1 is usually somewhere between the

operating band frequencies (with the dipole element halves disconnected).

The two-band dipole may have different forms:

- (a) A dipole of wire or tubing.
- (b) A ground plane radiator and radials.
- (c) Any yagi beam element, and any number of these.
- (d) A loop of a cubical quad aerial element, any number of these.

These combinations have always two resonances simultaneously, and can be tuned to work on two bands. The full dipole length is effective on both bands. No unwanted or harmonic resonances occur (3rd, 5th, etc.). L1 may be a closed stub or loop or coil. C1 may be a piece of cable, an adjustable or fixed capacitor.

Fig. 8
The one-loop two-band cubical quad element may be tuned for the required radiator, reflector or director frequencies.

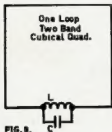


FIG. 8.

Fig. 9
Also in the case of the two-band ground plane aerial, L can be adjusted to tune the lower operating frequency, whilst C is more effective to tune the higher frequency.

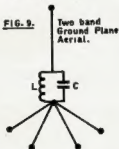


FIG. 9.

THE TWO FORMS OF THREE-FREQUENCY TUNED CIRCUITS

Figs. 10 and 11
Three simultaneous resonances, f_m , f_n and f_o , occur for any L1-C1, L2-C2 and L3-C3 value combination. The Type-A and Type-B versions give similar results. The three resonances are not necessarily harmonically related nor do they have to be evenly spaced. All resonances may fall within a frequency ratio Δf of less than 1.2 or over 1.3.

TRIBAND AERIALS

The series tuned circuit L3-C3 of the Type-A or Type-B circuit can be replaced by any dipole form, like a simple

dipole, the yagi beam element halves, a single loop of a cubical quad, and the radiator and radials of a ground plane aerial. The dipoles are connected to point I and II of the tuning section.

Figs. 12 and 13

Typical conditions:

f_m : Between high f-band and medium f-band (without dipole).

f_n : Between medium f-band and low f-band (without dipole).

Dipole: Resonance (without triband tuning section) between medium f-band and about 80% of low f-band.

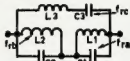


FIG.10. Three frequency tuned circuit.

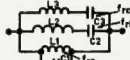


FIG.11. Three frequency tuned circuit.

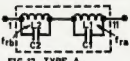


FIG.12. TYPE A.

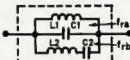


FIG.13. TYPE B.

Fig. 14

The Type-A or Type-B tuning sections (Fig. 12 and Fig. 13) form with the dipole element halves a triband dipole or any element of a triband yagi aerial. Similar elements may be tuned to work as director(s), radiator or reflector(s). The radiator or other elements as well may be fed.



FIG.14.

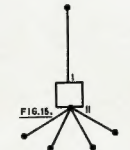


FIG.15.

Fig. 15

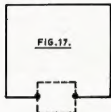
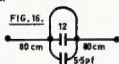
A triband ground plane aerial Type-A or Type-B tuning sections may be connected to I and II.

Fig. 16

Triband v.h.f. beam element with Type-B tuning section in symmetrical form. Bands at 64 Mc., 102 Mc. and 195 Mc. are covered with this set-up. The tuning inductances are short wire or tubing loops.

Fig. 17

A single loop cubical quad triband element which can be tuned to three bands with the tuning sections shown in Fig. 12 or Fig. 13. Such a cubical quad has only 1/4 the weight and wind resistance of a full size three loop cubical quad of the same mechanical strength.



The mechanical and installation difficulties are many times smaller, so is the cost of the mast, rotor and maintenance. Yes, it is a compromise and the gain is less, but it still puts the signal in good DX company. It is the quad that will be tolerated at many more locations than the big brother presently is. This quad could be used as indoor aerial strung at two opposite room walls. The tuning sections can be switched to change the reflector or radiator function, to make the quad usable in two directions.

The quad is known to be quite effective at less than one wavelength in height, which is the main reason why many quads are better than too low yagi beams.

Triband Tuning: Low f-band resonance depends mainly on dipole length and L1.

Medium f-band resonance depends mainly on C1 and L2.

High f-band resonance depends mainly on C2 and L3.

The aerial must be efficient, because correctly built tuning sections do not become warm, a low v.s.w.r. can be obtained. The radiation pattern shows deep nulls at the sides and the normal beam front-to-back radiation ratio.

EXPERIMENTS WITH TRIBAND ONE-LOOP CUBICAL QUAD ELEMENTS

Example: Desired band frequencies: 80 Mc., 60 Mc. and 40 Mc. Midband frequencies for tuning section (alone) 70 Mc. and 50 Mc.

Fig. 18

a and b—

L1—10 turns, 1.7 cm. diameter, 3 cm. long.

L2—6 turns, 1.7 cm. diameter, 3 cm. long.

C1 and C2—Trimmer, 10-40 pF.

(a) Wire loop = 4 x 1 m. attached to I and II.

Resonances of f_{rs} = 52 Mc., f_{rs} = 70 Mc. (without loop).

Resonances with loop: 40 Mc., 60 Mc. and 80 Mc.

(b) Wire loop = 4 x 1.25 m. attached to I and II.

Resonances of f_{rs} = 52 Mc., f_{rs} = 84 Mc. (without loop).

Resonances with loop: 40 Mc., 60 Mc. and 80 Mc.

c and d—

L1—6 turns, 1.7 cm. diameter, 2.5 cm. long.

L2—4 turns, 1.7 cm. diameter, 1.8 cm. long.

(c) Wire loop 4 x 1 m. attached to I and II.

C1 = 38 pF, C2 = 18 pF.

Resonances of f_{rs} = 42 Mc., f_{rs} = 74 Mc. (without loop).

Resonances with loop: 40 Mc., 64 Mc. and 80 Mc.

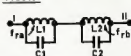
(d) Wire loop 4 x 1.25 m. attached to I and II.

C1 = 32 pF, C2 = 16 pF.

Resonances of f_{rs} = 44 Mc., f_{rs} = 82 Mc. (without loop).

Resonances with loop: 40 Mc., 54 Mc. and 80 Mc.

FIG. 18.



Example: One-Loop Triband Quad Element for 14, 21 and 28 Mc.

Fig. 19

Coil former—3.7 cm. diameter, 8 cm. long.

L1—7 turns, 1.6 cm. long.

L2—5 turns, 1.1 cm. long.

L3—4 turns, 1 cm. long.

f_{rs} = 17 Mc., f_{rs} = 23 Mc. (without loop).

Wire loop—4 x 3.5 m. = 15 m. long, attached to I and II.

Spacing of two one-loop elements: 2.5 m.

V.s.w.r. over all three bands below 1:2.

Type-A or Type-B tuning sections may be used with similar results.

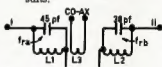
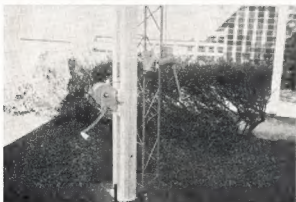


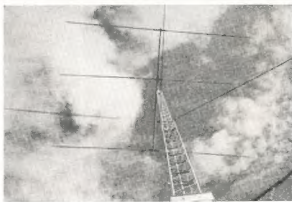
FIG. 19.

FEEDING METHODS FOR MULTIBAND AERIALS

A simple link coil as shown above may be used. The earlier versions of the VK2AOU beam made by DJ2UT had this link coil and a single co-axial feed line was used. He developed more recently a two element feeder method with a crossed over connecting feeder, to feed also the reflector, which made the front-to-back ratio (reflector tuning) less dependent on the beam height (Continued on Page 10)



Steel mast with crank up winch, right. Left, 12 feet supporting mast with tilt over winch (boat winch).



Three element triband beam at VK2AOU with central tuning sections from DJ2UT about 65 feet up. A TR-44 rotor is now in use.

A HANDY D.C. SUPPLY FOR THE BENCH

ROLF B. PETERSEN, VKSZIE

A LONG with many other Amateurs, I felt the need for a flexible general bench supply for development and testing of a wide variety of transistor circuits.

After some thinking and looking around, I came across a Trimax TP1550B transformer, which seemed to be just begging to be put into such a supply. It has four 6.3v. windings, one of which is centre tapped, and one of 5v., all at 3 amps. r.m.s.

I thought that it would be best to keep things quite simple and that a few hours of development and a few more for the final build up would be sufficient. Three months later! I had what seems to be a very useful piece of gear, only, it's not very simple. In fact, when I finally finished it, we will have a fairly ambitious project.

As it stands it has no overload protection, so some care is needed when using it. The overload protection will be added later, probably when I blow up some transistors.

current (I_{CBO}) of germanium ones will upset the work.

The small transistors should all be mounted so that they won't be heated by warm components, e.g. power transistors, rectifiers and transformers. The same of course goes for electrolytic condensers. Easy and ample airflow through the unit should be provided.

Now let us have a look at the circuit diagram. The first thing we see here is that there are three supplies. The one in the middle is the main supply which carries the load, and the two are auxiliaries.

The regulated supply at the bottom provides a stable +20v. rail which is used as the reference source. The tranny was hand wound on an existing core.

From the one on top we get 6.2v. which is riding on the output rail and is used as collector supply for the amplifier transistors and the first emitter follower. This is known as a pre-regulator and it greatly improves regu-

little. A 4,000 uF, 50v. condenser is used as reservoir and from it the regulator 2N513B is feeding the load through 40 megohms which gives the meter a 2.5a. range. A spare relay contact at this point keeps the meter disconnected until the first charge-up surge into the 5,000 uF. condenser has passed.

A d.p.d.s. switch serves to convert the meter to a voltmeter and, having a 50v. range, it then monitors the voltage right at the output terminals. This is also the sensing point for the error amplifier. Switch 1b selects a suitable tap on the 1K resistor chain for every chosen output voltage. The 1K pot. at the base of the first amplifier is a front-panel control and sets the exact voltage at the output. It is possible, on the higher ranges, to turn the output voltage down beyond the next lower step, i.e. from 24v. to below 18v. This should not be used as it may overload the 2N513B and, if driven too far, will result in inferior regulation. However, the full range of 6v. from one step down to the next can be confidently used to the full two amp. capacity.

The bottom end of the chain goes via 2.7K and a 2K trimpot, to the +20v reference rail. On initial adjustment the output selector S1 is set to 6v, and the 2K trimpot is then used to set the output to just over 6v, with the 1K front-panel control fully c.w. Before that, of course, the 20v. reference supply must be adjusted.

The error amplifier is a differential type and uses four BCY11 transistors in Darlington connection. These four transistors must be thermally strapped together. To do this I used four Philips mounting clips and screwed them back to back in a sandwich fashion. No other heat sink is required at this place.

The 513B is mounted on a commercial heat sink which is insulated from the remainder of the unit. There is no mica insulator between the 2N513B and its heat sink, for better heat transfer. This transistor is driven by two emitter followers, a 2N1183 and a BCY11. The leakage current of the transistor used in place of the 2N1183 must be low, even at high ambient temperatures, to enable the output to go down to zero.

Turning now to the +20V reference supply, we see that it is a straight forward stabilised supply. It contains the relay and time delay RC combination. There is an OA5 diode included which is normally off and comes into action when the unit is switched off. What happens is that upon switching off, the reference supply discharges more quickly than the 5,000 + 4,000 uF. condensers in the main supply and they will charge the OA5 and the condensers in the reference branch the wrong way, which will make the latter ones very reliable after some time. The OA5 prevents the reference rail from going more negative than 0.2 of a volt.

Some experimenting went into the attainment of reasonable temperature

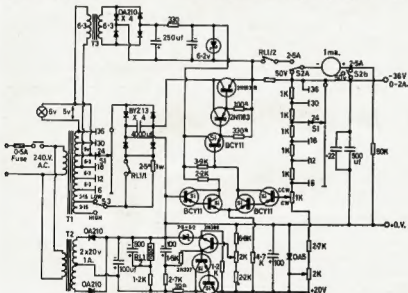


FIG.1. REGULATED POWER SUPPLY.

Performance is fairly good. The supply will deliver any voltage between zero and 36v. at currents up to two amps. Regulation is better than 0.25%, temperature stability is about 0.1%/°C. or better.

One useful feature is the fact that one can simulate flat batteries by connecting a small value variable resistor in series with the output and adjusting the volts to suit.

The transistors used in the unit are types that had been on hand. Other types can be used, of course, as long as their characteristics are similar. It is important to use silicon transistors where indicated, as the high leakage

lation of the output voltage. The transformer (T3) can be a t.v. booster. If a main transformer (T1) with an additional 6.3v. winding can be bought or wound, so much the better.

Back at the main supply, we see that the voltage which is applied to the bridge rectifier is increased in step with the selected output voltage. I did this to keep the dissipation in the 2N513B at a comfortable level.

Also in that part of the circuit is a 2.5 ohm resistor, which is shorted out after 0.4-0.5 sec. It limits the switch-on surge current to an acceptable level, thus enhancing the life expectancy of the four BYZ13s and the 2N513B a

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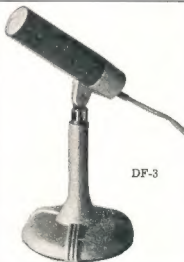
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ADDITIONAL NOTES ON TRANSISTOR REGULATED POWER SUPPLIES

The referred to power supplies featured in "Amateur Radio" in February, April and May issues, 1967. R19 of the power supply (April issue) should be 30 watts, not 3 watts as shown. In Fig. 2 (same issue) the AC127 is shown as a PNP when it is a NPN type, see accompanying diagram. It is suggested

uF. capacitor wired across the base-collector of the AC128 control transistor TR2. A paper capacitor may also be placed across the output of all these supplies, should the electrolytic across the output go open all sort of funny effects can occur such as oscillation of the more sophisticated of these supplies.

Now referring to the a.c. supply for the 122 set, R6 is the 1 ohm resistor in the collector lead of the 2N441 transistor and R5 is the 680 ohm resistor between the plate of the VR150 and pin 2 of the Set input. A modification to save one zenor diode Z1. The cathode of VR150 can be taken to the 12 volt regulated line which goes to the valve filaments and heaters, etc., on pin 10 or 12 of the Set input. R1 is the 68 ohm 1 watt resistor.

I hope in the future to design yet another type of transistor regulated power supply using a variable duty cycle multivibrator controlled transistor switch operating at a frequency somewhere between 1 kc. and 10 kc. This type of supply would be much more efficient than the preceding ones that I have described. Depending on how experiments go as to when this proposed supply will be presented.

—Rodney Champness, VK3UG.

SINGLE LOOP TRIBAND CUBICAL QUAD ELEMENT

(Continued from Page 6)

and surrounding objects. A ferrite transformer or cable balun may be used to connect the feeder.

Figs. 20 and 21

The phase relationship of the fields in L1 and L2 vary from band to band, so that too much direct coupling between these coils has to be avoided. It is not necessary, as originally proposed by the writer, that separate link coils and feeder cables be used to couple to L1 and L2. Coupling to the larger coil is sufficient, as found by DJ2UT.

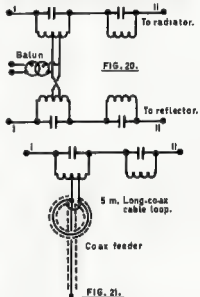


FIG. 21.

SOME PRACTICAL DESIGN FEATURES

DJ2UT used short pieces of co-axial cable as capacitors and they are later placed inside the element tubing. The coils and inner capacitor ends are sealed and moulded in resin. The centre section is about 40 cm. long and has 5 cm. diameter. The tuning of the lowest frequency is carried out by adjusting the element length. The medium and highest frequency are tuned by shifting copper rings more or less over the ends of L1 and L2, which can be done from outside without affecting the sealed coils in any other way.

The writer wishes to thank OM Sommer (DJ2UT) and his co-workers for the very considerable amount of work carried out and the many good and practical ideas which made successful serials with this triband principle.

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- "Amateur Radio" (VK), May and June 1966, by VE2AOU.
- "DL-QTC" (DL), March 1968, by VE2AOU.
- "Funk-Technik" (DL), No. 16 and No. 17, 1960, by VE2AOU.
- "Break-In" (ZL), June and July 1963, by VK-2AOU.
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- "DL-QTC" (DL), June 1964, by DL1EB.
- "DL-QTC" (DL), April 1963, by VE2AOU.

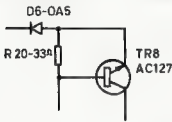


FIG. 2. Correction.

that C6 in the same power supply should be an electrolytic designed for high ripple operation, this applies to the reservoir capacitor in all four types of supplies described in the three articles.

The two power supplies using output voltage sampling may also have a 0.01

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 VK2KZL-A. R. Avery, 21 Haglan St., Moorman, 2088.
 VK2ZFP-P. J. Ryan, 58 Wicks Rd., North Ryde, 2112.
 VK2ZTQ-R. A. Cameron, 23 Hull Rd., Pennant Hills, 2120.
 VK2ZWT-W. Wright, 193 Botany St., Carillon, 2218.
 VK3GL-L. F. Schmidt, 3 Ward St., Ashburton, 2167.
 VK3HUN-D. Morrison, 27 Clonsal St., East Brighton, 3187.
 VK3ND-L. Kureki, 18 Boort St., Broadmead, 3047.
 VK3UB-J. E. J. Walsh, 34 St. Elmo Rd., Ivanhoe, 3079.
 VK3ABN-A. Camp, 96 Orchard Gr., Blackburn South, 3150.
 VK3AGF-R. N. Ferguson, 23 Floral Ave., East Midland, 3200.
 VK3AJG-J. Glen, 1 Plunkett Ave., Omeo, 3604.
 VK3JBS-D. J. Slade (Capt.), 28 Westfield Ave., North Clayton, 3168.
 VK3APF-E. Wilson, 14 Brook Dr., Altona, 3018.
 VK3ACP-L. J. Boyce, 123 Huntingdale Rd., Belmont, 3215.
 VK3AQO-B. Gardiner, 53 Edinburgh St., Clayton, 3168.
 VK3ZBB-R. C. Arnold, 41 Grammar St., Strathmore, 3041.
 VK3ZFB-R. F. J. Gale, 8 Ryder St., Niddrie, 3041.

VK3ZKB-K. J. Bond, 61 O'Shanessy St., Nunawading, 3131.
 VK3ZMH-R. F. Harris, Harris Gully Rd., Warrandyte, 3112.
 VK3ZOT-Taralgon Technical School, Station: Grey St., Taralgon, 3644; Postal: P.O. Box 65, Taralgon, 3644.
 VK3ZUY-D. W. Brumley, 32 Faversham Rd., Canterbury, 3120.
 VK3ZUX-K. C. James, 61 Northernhay St., Reservoir, 3073.
 VK3ZVP-B. P. Cranston, 5 Belvoir St., East Doncaster, 3109.
 VK3ZWE-P. Dawson, 34 Ross St., Surrey Hills, 3127.
 VK3ZWQ-D. S. McGuire, 16 Clarke Ave., Caulfield, 3103.
 VK3ZXO-L. W. Bouchier, 86 Elizabeth St., East Coburg, 3008.
 VK3ZYG-J. W. V. Storey, Zig Zag Rd., Eltham, 3086.
 VK3ZYC-E. Collins, Blackwood Ave., Balgrave, 3181.
 VK3ZYD-D. R. Jones, 399 Lower Heidelberg Rd., Heidelberg, 3084.
 VK3ZYW-R. W. McLean, 313 Crompton St., Ballarat, 3250.
 VK3Z2C-N. W. McCay, 89 Thames St., Box Hill North, 3120.
 VK3Z2N-N. J. Spalding, Station: Flat 1, 13 Munro St., Armadale, 3143; Postal: C/o Post Office, Cresy, 3222.
 VK3ZEP-D. J. Pinson, 24 Salisbury St., Reservoir North, 3041.
 VK4NF-L. N. Williamson, 129 Esplanade, Cairns.
 VK4TL-J. E. Roberts, Murray's Corner Store, Trinity Beach, via Cairns, 4878.
 VK4ZLE-L. C. Manning, 116 Ninth Ave., St. Lucia, 4067.
 VK4ZMB-D. M. Ryan, 30 Richmond Ave., Coopers Plains, 4180.
 VK4ZYS-Yeppoon Street High School Radio Club, Villa St., Yeppoon, 4104.
 VK5AH-A. H. Brooks, 89 Elight St., Eidsleton, 5006.
 VK5VU-V. W. Stallan, 43 Devonon Rd., Elizabeth, 5118.
 VK5ZKM-K. H. May, 263 Swanport Rd., Murray Bridge, 5252.
 VK6ZPE-W. N. Kirby, 34 Churchill Rd., Ovingham, 5083.

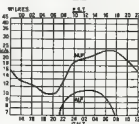
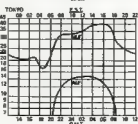
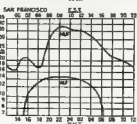
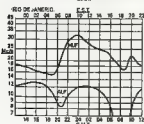
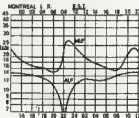
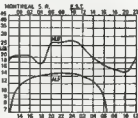
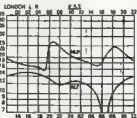
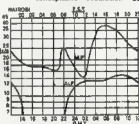
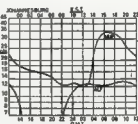
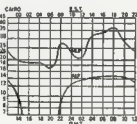
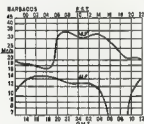
VK6AB-E. J. Boudell, 9 Taiting St., Kilmouth, 5797.
 VK6ER-K. A. Ray, 5 Leermouth St., Kilmouth, 5797.
 VK6KL-K. L. Miller, 7 Freeman St., Melville, 5158.
 VK6ME-M. A. Elliott, 48 Pandora Dr., City Beach, 6015.
 VK6ZAG-J. P. Marks, Aquinas College, Manning, 6152.
 VK7DE-D. K. Burkinshaw, 30 Philosopher St., Savage River, 7231.
 VK7E2E-H. W. Spaulding, D.N.R.S. Coomawarra, Darwin, 5700.
 VK7ZSJ-J. L. Sinclair, Station "Mandorah," via Darwin, 5700; Postal: C/o R.H. Broadcast Project, P.M.G. Dept., Darwin, 5700.

CANCELLATIONS

VK1AYS-T. W. A. Wilson. Now VK1BW/T.
 VK2ZGN-J. E. Kelston. Transferred Interstate.
 VK2Z3C-B. S. Churchill. Transferred Interstate.
 VK2Z5U-J. F. Sutcliffe. Now VK1ZJF.
 VK3ET-B. F. Farrar. Not renewed.
 VK3NS-R. Bennett. Deceased.
 VK3VW-V. W. Stallan. Now VK3VU.
 VK3AZU-B. A. Stevens. Now VK2BBS.
 VK3ATE-R. C. Palford. Not renewed.
 VK3ATY-J. F. O'Toole. Not renewed.
 VK3AWR-W. S. Knapp. Not renewed.
 VK3ZFG-A. E. Hiscock. Now VK3ZFG.
 VK3ZMG-J. W. Curren. Not renewed.
 VK3ZMV-A. Camp. Now VK3ABN.
 VK3ZQJ-L. F. Schmidt. Now VK3GJ.
 VK3Z3C-B. Gardiner. Now VK3ZAG.
 VK3Z7M-D. E. Stackpole. Transferred to South Australia.
 VK3ZVL-L. Kurch. Now VK3KD.
 VK4BH-M. Brown. Deceased.
 VK4HG-J. M. Hamilton. Transferred Victoria.
 VK4NX-N. Williamson. Now VK4NF.
 VK4ZBZ-J. A. Zubrinich. Cased operation.
 VK5ZLJ-A. R. Jenkins. Not renewed.
 VK5ZSJ-J. L. Sinclair. Now VK5ZSJ.
 VK5ZDJ-K. L. Miller. Now VK6KL.
 VK6ZCF-H. Schroder. Transferred to New South Wales.

PREDICTION CHARTS FOR APRIL 1968

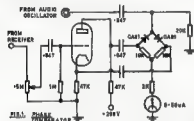
(Prediction Charts by courtesy of Ionospheric Prediction Service)



K. C. BICKNELL,* VK6ZCB/T

This article is designed to help many who will be endeavouring to extract telemetry data from the Oscar Australis satellite. The telemetry takes the form of an audio frequency appearing in the range 500 cycles to 3 Kc.

To obtain accurate data from this a means of measuring the frequency is required, once the frequency is known the use of calibration charts will give details of satellite functions. As can be seen, reasonable accuracy of audio frequency measurement is essential. Methods used can be direct reading frequency meters or digital frequency meters, where the latter give inaccuracies under noisy signal conditions. Another method is to use a standard oscillator and compare it with the audio signal from the satellite. This can be done by feeding both into a c.r.o. and forming a Lissajous pattern; this system is difficult when noise on the incoming signal is fairly high. One other point is that not many shacks are equipped with digital frequency meters or c.r.o.s. A simple method is to compare the frequency of the signal with the carrier frequency of the c.r.o. once again under noisy signal conditions accuracy of reading is hard to obtain.

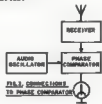


By using a phase comparator we overcome the noise problem and have a cheap direct reading device that can be used off receiver audio during a satellite pass. This means that those who don't have recording facilities can still extract important information and assist in the project. However, this unit can be used in conjunction with tape, after the pass to extract data.

There is one problem, however, tape recorders have inherent wow and flutter, which will cause frequency modulation of the recorded signal. To determine the unknown frequency under these conditions the standard oscillator is tuned until the meter deflects negatively or positively, depending whether you are high or low in frequency. As you near the exact frequency the meter will oscillate between negative and positive, and when the amount of deflection is equal in the negative and positive directions the frequency is exactly in phase and a direct reading from the oscillator calibration can be taken. When measuring from tape, the frequency and severity of the deflection will depend on the condition of your tape machine.

When measuring under ideal conditions, such as direct from receiver audio, a steady negative or positive reading will appear on the meter. When the standard oscillator is exactly on frequency the meter will read zero. There will be no reading on the meter until the standard oscillator approaches the frequency of the unknown signal. A sudden deflection occurs when about 20 Kc. off frequency, it is then only necessary to adjust the standard oscillator until the phase comparator unit reads zero.

A short description of the phase comparator (Fig. 1) may help you to understand its operation. It is basically a bridge, of which two arms are fed from the unknown signal, one 180° out of phase with the other, obtained using a phase splitter. The standard source is fed into one leg and the other side of the bridge is fed to a centre zero 50 μ A meter.



The unknown signal being 180° out of phase, will produce no output; this also applies to any noise on the incoming signal. When the standard signal is not in phase with the unknown signal, the bridge will be unbalanced, one diode will conduct depending on the phase relationship between the signals, and a negative or positive voltage will appear at the arm of the bridge being metered. As the phase of the unknown signal approaches the phase of the standard signal, the meter will move towards zero. When both signals are in phase the bridge is once more balanced and a zero reading will appear on the meter.

As you can see, unless noise is occurring at approximately the same frequency as is being read, it has no effect on the meter reading. Under test conditions a 1 Kc. tone was set up on a c.r.o. and receiver noise was added until the original signal was not visible, being completely masked by noise. There was no change in accuracy of measurement, and for that matter, no indication of the presence of noise.

I will not add a circuit of the audio oscillator, as many circuits have been published. One in the December "Electronics Australia" should be suitable, but one improvement would be to bandspread the range between 500 cycles and 3 Kc. to obtain greater dial calibration accuracy. Any commercial unit should be suitable, provided its calibration accuracy can be trusted.

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Sub-Editor: PHIL WILLIAMS, VK5NN
37 Wills Rd., Coromandel Valley, 5051

HAMILTON S.S.B. GATHERING

The January 1988 holiday week-end saw yet another successful Sidebanders' Gathering at Hamilton, Victoria. This was the third of these week-ends, which are held every other year. Local organisation was by Danny VK3ADD, Ern VK3AEM, and Tim VK3TW, all of Hamilton, assisted secretorially by Dud VK2DQ, who, unfortunately was kept at home in Broken Hill by a throat infection.

Sidebanders assembled at the Western Motel on the Saturday afternoon before the dinner in the evening. Several arrivals were filmed and shown on the Ballarat Regional Television that evening. With true journalistic licence the announcer described proceedings

tions governing power output of s.s.b. transmissions.

The second speaker was George VK3VX, who is the Institute's I.T.U. representative and organiser of the "Intruder Watch". He stressed the reasons why band occupancy is so important if we are to retain their use and not have them swallowed up by broadcasters and other unidentifiable intruders.

Geoff VK3AC had a few words of wisdom on further measures for mobile interference suppression. He followed this with a tape of Mr. A. Hancock as a Radio Amateur which gave us all the chance to laugh at "ourselves as others see us".

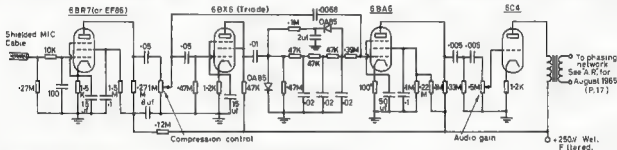
Finally Ray VK3ATN told us of his 2 metre moon-bounce experiments for which he received his Award of Merit from the A.R.R.L. He did well to tell us so much in the short time available, and concluded with tape recordings of the actual moon-bounce contacts.

Should you contact any VK side-bander who tells you that "It raining in Tokyo is not," you will know that he enjoyed his visit to Hamilton—January 1968.

In the original circuit a simple screen grid dropping resistor was used, but I found it necessary to use a voltage divider, as shown in Fig. 1, otherwise, when you try to bias the 6BA6 grid to reduce its gain, the screen grid draws less current and its voltage swings up to almost full h.t. and the gain does not reduce as required. Adding 100K from grid 2 to earth had the desired effect.

As published, the 6BA6 had a plate load resistor of only 22K ohms, and so its output was very small. Obviously the original was intended to provide an output signal at a level similar to the microphone. Increasing this to the 100K ohm shown gave sufficient drive for the 6C4.

The 6BK6 only amplifies the signal and the network with diodes, resistors and condensers which follows it, provides the control bias for the 6BA6. The a.f. signal is fed to the 6BA6 by the 0.0068 μ F. capacitor. The OA85 diodes are nothing special and any germanium diodes with high back resistance will be satisfactory. Those used measured about 0.5 megohms on the ohm meter's "ohms $\times 1000$ " scale.



F.G.1 AUDIO AMPLIFIER FOR SSB, EXCITER—WITH SPEECH COMPRESSION.

at the Hamilton "Single-Side-Board" convention, but this was "heavily" corrected at the second showing. How would they react if we were to refer to their "vestigial sideboard transmission"?

The trip to Hamilton was hot for all travellers except for John VK2QJ and XYL Ruth, who flew down from Berri (N.S.W.).

It was much cooler next morning for the technical lecturettes at the R.S.L. Hall. The first speaker was your scribe with a brief review of current matters of interest to sidebanders, in particular the newly promulgated P.M.G. regula-

SPEECH-COMPRESSOR FOR EXCITERS

I have built speech compressors before, the old type with push-pull variable-mu tubes with transformers and full-wave diodes, and more recently the transistor type, to save space. The former are too large, and the latter appear to add quite a bit of distortion which some hours of persistent work did not correct.

Then came the simple valve job in February 1963 "QST," so I decided to build it into the exciter here at VK5NN. I have followed the original circuit rather loosely, and made the following discoveries and changes:

The original amplifier was shown in August 1965 "Amateur Radio" on p. 17. This used a 12AX7 followed by a clipper to drive the 6C4 output stage. Two more valve sockets were fitted to the chassis, the first a 9-pin (novol) and next a 7-pin miniature for the 6BA6 controlled tube. The first change was to re-wire the 12AX7 socket to take a 6BR7 low-noise audio tube—much like an EF86 which is probably more readily available in Australia.

A 6AB4 triode was hard to find so a 6BX6 was used as a triode, but it was necessary to double the plate resistor to 47K to get sufficient voltage out of the stage to bias off the 6BA6.

This compressor appears to do the job without introducing distortion. If you expect to be able to walk around the shack and talk, letting the poor compressor take up the changes in level you will be disappointed, but tests on the air showed that it had adequate control from about 2 feet to 3 inches from the mouth, with normal speaking, although room echoes, the clock, the dogs and kookaburras, all tend to show up between words if the mike is too far away.

The beauty of this compressor is the small space it took to build it into the exciter. It will certainly be useful for shack visitors, especially when "Jamboree of the Air" comes around again.

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TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

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**We are clearing our stocks of SWAN 500 Transceivers for
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A new Swan 350 and 500 is shortly due to appear with new type output tubes and the 500 will have sidetone oscillator for the CW man.

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- ★ Galaxy V Mark 2, \$550.
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- ★ Gonsett SB2 2 metre SSB Transceiver with 110 power supply, \$400.
- ★ Imported Hy-gain TH6-DX Thunderbird Antenna with the new BN-86 balun included, \$220. Without balun, \$210.
- ★ Hy-gain TH3-JR with BN-86 balun, \$110. Without the balun, \$100.
- ★ BN-86 Balun, \$17.50.
- ★ Ham-M heavy duty Rotator, \$180.
- ★ Soon available: German 9 Mc. super Filters with 8 crystals, \$40.
- ★ HA-14 Linear Kits with power supply, \$225.
- ★ Heathkit HW32A single band Transceiver Kit for 14 Mc., \$170.
- ★ New-Tronics 4BTV 80-10 metres Vertical, \$70, or without 80 metres top loading, \$55.

Since the absence of Arie overseas, I have been doing my best to meet the needs of all. He informs me that in a short while he will be homeward bound with a stopover in Japan to glean from what is offering there the best in Ham gear and this will be put on the market on his return at our usual competitive prices.

—Alex Outtrim.

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Moon-Bounce Schedule

The following information was received from the Foreign Section Editor, V.E.R.O.N. V.H.F. Bulletin, Schiedam, Holland (Box 15).

SPECIAL BULLETIN

From Crawford Hill, V.H.F. Club, W2NFA, Holmdel, New Jersey, U.S.A.

Issued January 10, 1968.

Subject: KME TEST—An KME Test is scheduled for April 12-14, 1968, on 1290 Mc. All stations having adequate 1290 Mc. equipment are invited to participate. Schedule request will be honored in advance by mail. Please state equipment capability.

An alternate test period is also provided in the event that local weather or technical difficulties prevent operation on the above dates. The alternate test periods will be April 19-20, 1968.

Station equipment at W2NFA: Transmitter power, 200 watts minimum output, transmitter frequency, 1290.000 plus or minus 5 Kc. Mode of transmission, CW or S.S.B. Antenna, 50 ft. parabolic reflector, estimated gain 44 db. above isotropic. Polarization, right circular transmit, left circular receive (L.R.E. definition). Receiver n.f.s. 3 db.

Moon visibility at W2NFA (40.1) degrees N, 74.3 degrees West.

Moon Rise 2200 GMT, April 12, to Moon Set 1025 GMT, April 13. Friday night orbit—we may start late).

Moon Rise 0218 GMT, April 13, to Moon Set 1057 GMT, April 14.

Moon Rise 0520 GMT, April 15, to Moon Set 1150 GMT, April 16.

Moon Rise 0708 GMT, April 17, to Moon Set 1233 GMT, April 18.

Procedure: Echo testing will commence at moon rise and continue for one half hour prior to any schedule. Estimated echo S/N in a 1 kc. bandwidth is plus 11 db.

All reports of reception will be greatly appreciated.

Official liaison station: W2NDR will assist on official liaison station on either 14.285 kc., 21.285 kc. or 28.340 kc.

ATTENTION V.E.P.E.R.S.

During the early months of 1968, Iceland will be represented on 144 Mc. From approximately 25th Jan. to 15th April a station will be in operation at Keflavik on the 7, 14, 21, 28 and 144 Mc. bands, using maximum legal power (150 watts input). Sufficient system gain should be available to almost guarantee contact with the V.K. on 144 Mc. Stations with other countries will be desired.

Publications Committee Reports

February Meeting.—The committee received correspondence from VKs 3ALX, 3A1S, 3ASG, 3AMK, 3ZQC, 3ZKC, 4ZAL. Technical articles arrived from VKs 3AOU, 3JR, 3UG (3) and 4RM. These contributors will, at usual receive acknowledgments through the mail.

It was decided that we would in future hold our meetings on the first Monday in the month. Since the second Monday falls no later than the eighth of the month. By this means, we can avoid late meetings and the exclusion of monthly reports through meeting nights falling due after "A.R." has been passed to the printer.

The financial position of "A.R." was considered, and as a result we resolved to publish fewer pages for the next few months and to approach Federal Convention for a price increase. The future of "A.R." depends on their decision.

After reviewing all the technical articles published in the previous year, it was decided that the Awards for Technical Articles should be made to Messrs. K. A. Kimberley and F. T. Hine. Many names were considered for the Higginbotham Award. It was agreed that this award should go to Ian Herwick, VK3ALX, as recognition for his consistent submission of articles on original work and research he has done.

March meeting.—Technical articles were received from VKs 2ZPM and 6ZCB, whilst correspondence was received from VKs 1AFL, 4ZAL, 6ZIM and Owen Mace of Project Australia.

Discussion centred round the unsatisfactory position with the mailing service, and the possibility of making a change will be again investigated. A number of letters have been received on the subject of the new regulations and particularly the code speed requirements. These are, at the time of writing, with Federal Executive for vetting, and will all be published in the May issue.

SUBSCRIPTIONS DUE

All members of the W.I.A. are reminded that annual subscriptions are now due and should be paid promptly to their Divisional Secretary. Non financial members will not receive a copy of "A.R." and back copies may not be available upon request. To preserve continuity of your files of "A.R." please pay your annual subscription now.

A HANDY D.C. SUPPLY

(Continued from Page 7)

stability of the 20v. rail. I found a fair solution by using a 6.2 + 7.5v. zener diode together with a germanium transistor, the 2N388, as amplifier.

All three supplies rely on a charge of the reservoir condenser to near peak transformer voltage for proper performance. Therefore, the transformer diode combination must have the required peak current capabilities.

Switch 3 is left in the low position for light loads and is put into the high position if the output voltage drops under load. There is a possibility that the output may drop under high load in the 6v. position of S1. If that occurs, the load from S1a plus 1 can be connected to the 12v. tap and the switch No. 3 put to low, thus applying 9.45v. to the rectifier.

The top supply, or pre-regulator, keeps a more or less constant current in the 3.9K collector resistor of the amplifier. This current is then distributed between the base and collectors connected to the right hand side of 3.9K according to input voltage level and load and Mr. Kirchhoff.

The first emitter follower, the BCY11, also benefits from a constant collector supply.

Now then, with a fairly well stocked parts shelf, some patience and the above words, plus circuit, you can, if you wish, go to it. Shouldn't take you three months.

VK-ZL-OCEANIA DX CONTEST

(Continued from Page 18)

Listeners' Section

A243	2074	REF16783	—	1996
A324	3282	REF-7143	—	330
BLS-342H	6944	SPT-7055	—	80
GW77W	114	UAJ-74512	—	814
D11290	3004	UAJ-7500	—	460
DL10101	44	UAB-15948	—	678
DM243/L	126	UAB-14144	—	88
DM2588-M	4212	UBA-055-3	—	88
DM2468-N	222	UAB-2847/CAB	—	1840
DM0773/3	18	UAB-0721	—	448
DM2154/3	15	UBS-0870/U44	—	1214
DM2556/7	123	UBS-8451/U17	—	948
DM4023/L	618	UQE-087-10	—	2864
DM2109/M	1386	UQS-22431	—	1022
HAS-131	62	UBS-4007	—	6600
HAS-030	288	VES-11008	—	24
ITL-12547	720	VU-SWL0030	—	230
JAT-1529	808	WFE272D	—	1120
JAB-1520	1508	WFE3XLU	—	1708
ONL-3013	1304	WFE7BLN	—	2228
ONL-383	1602	WFE8AA	—	160
NL30	88	WQ-520	—	48
REF17535	360	YUERS-233	—	410

Check Logs

KISF	OZTKV	Z86D
JAMON	PZ1CQ	SMTMO
JATPC	PZ2AH	SMRCP
LZ1YW	SP3BMM	PAJPC
OE3WVB	UAKBA	G3WF
OHBYV	U2SVQ	DM4ED
OHBYV	VKXEL	DM2W80
OHSSM	WIWY	DMRSE
OE3GW	W17X	DMRTO
OZ1PO	W4ACR	DMR2LJ
	YOKKA	

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Sub-Editor: CYRIL MAUDE, VK3ZCK
2 C Brandon St, Avondale Heights, Vic, 3034

V.F.F./U.H.F. OPERATORS PLEASE NOTE

Portable operation during Easter will be undertaken by Des VK3GCU, Barry VK3ZMW and Eric VK3ZEE, from a hill near Palmer, S.A., 35 miles on a bearing 80 degrees east of north from the Home of operations. Sat., 13th April, 1900-2200; Sun., 14th April, 0800-1000 and 1800-2200; Monday, 15th April, 0800-1000 hours, S.A.T.

44.990 Mc. 100 watts to 10 element beam. Will call for three minutes on the hour on a.m. listen for two minutes. If no contact will call on c.w. for three minutes commencing five minutes after hour, then later for two minutes.

433.650 Mc. 100 watts to stacked 8/8 skeleton slots. Commencing 15 minutes after hour S.A.T. Will call on c.w. for three minutes, then listen for two minutes. If no contact will call for three minutes on c.w., commencing 20 minutes after hour, then listen for two minutes.

During above schedules aerials will be pointed on a line through Deniliquin, N.S.W., which is midway between Mt. Kosciuszko (Keith, VK1VW) and Mt. Snowy (Eaglevale, VK1VW). Calls will also be made at other times between VK3, VK4 and VK1. Skeds may be arranged with dist. stations on request. Contacts with any stations will be welcome as time and band conditions permit. Further information from Eric VK3ZEE.

VICTORIA

Activity on the v.h.f. bands in the Melbourne area at least has been at a very low level. Over the Xmas period no exotic DX was worked. However, the few contacts did not advertise very well. On the equipment side of things, there appears to have been much activity in the workshop with a number of s.b. signals making their appearances on both 6 and 2 metres, and 1 km listed about 35 stations are active on 433 Mc.

The V.H.F. Group's 6 metre converter sales for Christmas are the group's original plan by a factor of three and this has delayed the appearance of the 3 metre and 433 Mc. versions. Production of the 3 metre version is expected by next month more details should be available. Anyone with suggestions for further projects are asked to write to the V.H.F. Converter Committee, P.O. Box 36, East Melbourne, 3002. Until May, 73, Cyril 3ZCK.

Eastern Zone, January—30 Mc. The season started off early with some good openings to 2L VK3, 5 and 6 and to VK4 (Nov. 18, 22, 26, 27, 28, 30, Dec. 3 and 4), then quiet until Christmas (Dec. 23, 24) and opened again over New Year (Jan. 2, 4, 6, 8, 9, and 13). However, nothing unusual happened. No VK3 8 or 6 heard, also no one logged the VK0 based in Gippsland. No short skip under 470 miles observed, hence no 35 opening recorded on 3 metre.

144 Mc. Consistent good openings to VK3 8, 6 and 7 throughout the season. The VK3V7 season was the best of the time in the forward area on Dec. 8, Jan. 4 and 14. Morning of the 4th it was interesting to note that 45 minutes after 10.30 a.m. the only VK3 worked. Active on Jan. 14, the only VK3 worked. Active on Jan. 14, the only VK3 worked. Active on Jan. 14, the only VK3 worked.

433 Mc. Four or five stations are becoming interested and building gear, also we propose to build an a.v. station as a group project. Feb. 1973—32 and 30 Mc. 8 m. openings observed in Gippsland, however the m.u.f. peaked above 34 Mc. to the north including Japan and to S.A. on 22.15 Mc. also 30 Mc. 8 m. openings for 40 Mc. for several days between 11th to 16th 26-day cycle; watch the band around these dates over the next three months.

144 Mc. Some long extended ground wave openings have occurred. VK3ZEO Deniliquin worked into Gippsland on 27th Jan.; same night, we had the first time since 1969, a free from AIRSIN Bega up to 2200 hours, not seen before or since. Sunday morning Feb. 4 we worked VK3 2ZL, 3CJ, 3ZKR, 3ZOR, 3ZUP at Gamba and worked VK3ZEE again on Feb. 13, 73, George VK3ZCK.

SOUTH AUSTRALIA

Since the completion of the Home Hull V.H.F. Memorial Contest six metre activity has been very sparse. However, there have been numerous reports of 1A signals on 30 Mc. during February, but as yet no signals have been heard or worked on 33 Mc.

Two metre activity on the other hand has been extremely high. Early in January Mick VK3ZDR moved QTH temporarily to Tantanoola in the South East, approximately 15 miles south of Mt. Gilead. Mick reports that he has his 10 element long yag. firmly planted 70 feet high and running his usual 190 watts. Signals from Mick into Adelaide have been consistent and always readable 5 with signals approaching many decibels over strength 9 on most occasions. Supplementing the activity from Tantanoola are John RHP, Col 3CJ and Col 3ZKER, who have also been putting very strong signals into the Adelaide area. The most notable opening of late on 2 metres was on Tuesday, Feb. 28, when many Adelaide stations worked into the Kaniva and Yarram areas of VK3. During the same evening the South East stations were working into Melbourne and Mick 3ZDR reports working 34 VK3s around that area. Also on Feb. 7 Mick worked VK3ZAH both ways on 2 mtr for the first time since his arrival. John 3CJ worked previously twice from his old location.

Again an upsurge in 576 Mc. activity has occurred and an Australian record of approximately 145 miles is to be claimed by John 3CJ and Graham 3ZYL. John was located 17 miles south of Kingston and Graham at Mt. Barker in the Adelaide Hills. 10 element collinear were used at both ends and John 3CJ was using stabilised gear. Signals were R3 38 both ways. Consequently, activity is high on 576 Mc. and would seem that this record is bound to fall in months to come.

On 2nd Feb. the annual general meeting of the V.H.F. Group of South Australia was held, and the officers elected for the ensuing year were: Chairman, Eric 3ZEE (re-elected); Vice-Chairman, Edwin 3Z73; Sec.-Treas., John 3CJ; Councillors, Barry 3ZMW, Mick 3ZQF. Extensive discussion was had over the agenda for the coming year and the committee are presently formulating a programme to be followed. From all indications it appears likely that 1968 will be the greatest year ever for v.h.f. activity in VK3, 73, 3ZNR.

NORTHERN TERRITORY

Barry VK3DI is running 30 watts a.m. on 53.3 Mc. to a 6 element beam. Mick VK3ZMR runs about 35 watts a.m. to a 5 element beam and communicates on 53.3 S.A.A., and is v.f.o. controlled and usually nets on either frequency.

VK3AU has s.b. about 45 watts p.p.s. is located at Belcher and is surrounded by tropical jungle. John 3CJ, who has been, seems to work okay VK3ZEE is still building his gear with assistance from VK3ZMR. Doug VK3KK has moved from Alice Springs to Darwin and is not active at the moment. Jim VK3ZSJ, ex VK3ZSJ, has 6 watts to a 5/8 whip on 6 metres and 8 watts to a 3 element beam on 3 mtr. The main activity has been on 2 mtr with a few VK3s and the Southern States. 73, Jim VK3ZSJ, ex VK3ZSJ.

Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

AMATEUR RADIO STATION AT INTERNATIONAL CONVENTION

Editor "A.R." Dear Sir,
The following information is provided as a news item which you might pass on to our fellow Amateurs through the medium of your Amateur Radio Journal or bulletin.

In April this year the 54th Session of ICAPE (Economic Commission of Asia and the Far East) will be held in Canberra, A.C.T. This is a very important International Conference and many top government officials will be present.

Eight technicians and myself as Project Manager will be handling the complete electronic side of the Conference for which we employ us in the electronics include simultaneous interpretation equipment, tape recording, closed circuit television coverage and radio frequency paging.

Three of the technicians including myself have Amateur operator's licences and intend

setting up an Amateur Station at the site of the Conference as a social recreation, for the technical team.

The Department of External Affairs will publish the details of the Conference Bulletin so that any delegates who are Amateur operators or interested in electronics may join in the social activities.

Because of the importance of the occasion, the call of VKIEC (Economic Commission) has been issued for the three weeks of the Conference activity.

Operation will be s.b. or a.m. mainly on 30 metres. Some operation will take place on 40 and 80 metres if sufficient interest is shown by VK stations.

Although not regarded as a new country or rare DX, all stations contacted will receive a QSL indicating the importance of the occasion and details of the operation.

Also as the Amateur operators who will carry out the exercise, believe that because of the many overseas countries represented at the conference and the interest shown by the Commonwealth Department concerned, this is an opportunity too good to miss, to publicise our hobby and the international goodwill it fosters.

Please assist us by conveying this information to the Amateur fraternity by any means at your disposal.

—Dennis Whiston, VK3AAW.

N.Z. ELECTRONICS CONVENTION

Editor "A.R." Dear Sir,
As you may be aware another National Electronics Convention—Nelson II—4 is being held in Auckland this August. This convention will once again reach a high technical level and form a meeting place for electronics professionals from all branches of the industry. Previous experience has shown that these conferences are attended by research workers, designers, engineers, technicians and other enthusiasts from all branches of Government—D.S.I.R. Broadcasting, Post Office, Defence, Railways, Forestry, Civil Aviation, etc.—as well as Hospitals, Power Boards, Universities and assorted manufacturing and industrial concerns both working in electronics and employing it in their processes.

We enclose for your information copies of the first two circulars which contain details of papers, trade exhibition and enrolment. We would appreciate any publicity which you can give to this conference which last time drew 450 delegates and 80 papers.

We will ensure that future circulars are sent to you and assure you that any further information can be obtained from the writer.

Thanking you in anticipation of your assistance,
—Robin K. E. Beckett, Publicity Officer.

CONTEST CALENDAR

6th/7th April: "CQ" W.P.K. Phone Contest (s.b. only).
11th/13th May: 17th OZ-CCA Contest (c.w. only).
6th/7th July: "Summer" Top Band Contest (R.R.G.B.).
13th/15th October: 21/35 Mc. Phone Contest (10-12-13).
26th/27th October: 7 Mc. Phone Contest.
7th/16th November: 7 Mc. C.W. Contest.

V.H.F. CONVENTION THE SOUTH EAST RADIO GROUP OF VKs

invite you to their
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MT. GAMBIER

SAT., SUN. and MON.,
8th, 9th and 10th June, 1968

Further details in May "A.R." and
in Divisional Broadcasts

BOOKS OF INTEREST FOR AMATEUR OPERATORS

- ★ A.R.R.L.—**THE RADIO AMATEUR'S HANDBOOK**—45th Ed., 1968 Edition Price \$6.10 Posted
The standard reference work and text for everyone—Hams, Experimenters, Students, Engineers, Laboratory Men, Technicians.
- ★ ORR—**THE RADIO HANDBOOK**—17th Edition Price \$13.45 Posted
Tells how to design, build and operate the latest types of Amateur Transmitters, Receivers, Transceivers and Amplifiers.
- ★ STONER & EARNSHAW—**THE RADIO TRANSISTOR HANDBOOK** Price \$6.65 Posted
This up-to-date Handbook covers a wide range of communication for both Amateur Radio and Commercial Applications.
- ★ A.R.R.L.—**THE RADIO AMATEUR'S V.H.F. MANUAL** Price \$3.00 Posted
- ★ A.R.R.L.—**UNDERSTANDING AMATEUR RADIO** Price \$3.00 Posted
- ★ A.R.R.L.—**THE A.R.R.L. ANTENNA BOOK** Price \$3.00 Posted
- ★ A.R.R.L.—**SINGLE SIDEBAND FOR THE RADIO AMATEUR** Price \$3.73 Posted
- ★ A.R.R.L.—**THE MOBILE MANUAL FOR RADIO AMATEURS** Price \$3.73 Posted
- ★ A.R.R.L.—**THE RADIO AMATEUR'S LICENSE MANUAL** Price 85c Posted

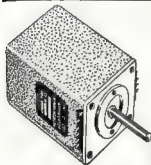
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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

LICENSED AMATEURS

Following are figures for November 1967:-

	Full	Limit	Total
VK1	19	19	38
VK3	1831	604	1725
VK5	1132	830	1063
VK6	470	194	664
VK7	490	284	774
VK8	284	181	415
VK7	138	79	211
VK9	18	35	53
VK9	66	18	79
VK9	8	0	8

Totals 3984 1897 5871

W.I.A. POSTAL MOTION 1/87

All Divisions have indicated an AYE vote to this motion. Accordingly, the W.I.A. Federal Contest Committee will be maintained by the Western Australian Division for the ensuing year, 1968, contrary to W.I.A. policy that this committee be maintained by each Division in tri-annual rotation.

INCORPORATION OF THE Q'LAND DIVISION

In the Public Notice for section 5 of the Brisbane Courier-Mail for January 24, 1968, a formal notice has been inserted advertising the intention of the W.I.A. Division to become a Company. The Divisional Secretary, Alan Simpson, indicates that their efforts to become incorporated are almost completed, so this action will follow the way for adoption of the new Federal Constitution as then all Divisions will be incorporated societies and able to become members of the Federal Company.

FEDERAL CONVENTION AGENDA

Motion sheets are being prepared and should be in the hands of Divisions early in March. Motions were received from all Divisions, and any further matters will have to be raised as General Session items as the deadline for receipt by F.F. has passed.

OVERSEAS MORSE REQUIREMENTS

Following the reduction in Morse speed requirements for the 1968 examination, it may be of interest to note conditions existing in overseas countries (Receiving Test):-

U.K.-Receptive 18 words 15 letters/word in plain language in three minutes, and 10 figure groups in 1½ minutes, more than four errors in plain language and more than two in the figures will result in failure.

U.S.A.-Examinations for General, Advanced and Extra classes of Amateur licence are conducted by an F.C.C. engineer. Exams. for all Novice Technician and Conditional classes are conducted under F.C.C. procedures by a volunteer supervisor (holder of General class or higher licence is usual) in the field. F.C.C. code examinations are given by machine, volunteer examiners mostly use hand sending. The applicant is required to send and receive, at the specified speed for on minute out of a five minute test without any error.

Europe.-Countries with 12 w.p.m. Germany, Finland, Netherlands and Norway, Sweden 15 w.p.m., and France, Switzerland are 10 w.p.m. the latter with a five-minute test and a maximum of three mistakes. (It need not be pointed out that I.T.U. headquarters is in Switzerland!)

AMATEUR OPERATION IN INDONESIA

The Minister for External Affairs, The Hon. Paul Hasluck, recently replied to a query regarding the matter. The Australian Embassy in Jakarta informed the Minister that the Indonesian Government had prohibited Amateur Radio operation in 1966 in force. It is described by an Indonesian representative of Jakarta Amateur Radio operators as "an older law", but the Indonesian Communications Council would be prepared to seek the withdrawal of the law and has undertaken to approach the Communications Council.

A.R.R. has informed on 14th December, 1967, General Soeharto signed a decree authorising Amateur Radio. It is understood that in a month the Indonesian Government will notify I.T.U. that it no longer objects to Amateur Radio communications and

that the ban can be lifted. There are several "amateur" groups in Indonesia, and currently two of these are showing signs of making application to I.A.R.U. for membership. Which of these is the proper outfit is at this time somewhat indeterminate!

Australian Amateurs are reminded of para. 78 of the "Handbook" which would seem to preclude communication with Indonesian Amateurs until such time as the P.M.G.'s Dept. has been notified by I.T.U. that the position which has existed for some years has been formally and officially altered.

.....

FEDERAL QSL BUREAU

The following changes in the A.R.R.L. QSL Bureau list have been indicated:-

W1-Hampden County Radio Assn., Box 236, Forest Park Station, Springfield, Mass., 01106.

W4 and K4-H. L. Parrish, K4HKF, RFD 4, Box 804, Hickory, N.C. 28601. (Cards for W4A, W4B and W4C continue to go to W4WIP as before)

KP4-Mrs. A. Rodriguez, KP4CL, Box 1061, San Juan, Puerto Rico, 00903.

The new QSL manager for the Canberra Radio Club, Box 1178, Canberra City, A.C.T., is Andrew Davis, VK4AA.

Boys Town Amateur Radio Society, WA9QOI, Boys Town, Nebraska, 68010, U.S.A., advises that Father Flanagan's Boys Home celebrated its 90th birthday on 22nd October. It has issued 500 Golden QSL cards to all stations who QSLed us in 1967. However, due to poor equipment and no set operating times, very few of these cards went to DX stations. In order to give any DX station a chance to work them and receive a special award, they will operate on the following times:- 14.70, 2400 GMT to 2600 GMT; 21.00, 1900 GMT to 2130 GMT, Feb. 25, Mar. 2, 10, 17. For each QSLed card they will return one of the awards.

Tubby Vale, VK2XO, ex VK2NO, advises that he has not kept the best health of late and the doctor has ordered him back south. This may mean a few weeks to become effective. VK2XO will continue in operation on 100 per cent. phone basis.

-Ray Jones, VK4RJ, Manager.

.....

FEDERAL AWARDS

HAWK HUNTER

The following operations were listed by the A.R.R.L. during 1967 as being unacceptable for DXCC Credit. As the W.I.A. DXCC is based upon the A.R.R.L. list, no credit will be given locally.

KIIMP/KC4-Navassa Is.
PYXCA-St. Peter and St. Paul's Rocks.
VK4ADY/S-Heard Is.
VK4ADY/S-Heard Is.
VQ8AA/C-Chagos.
IABRO-Bishop's Reef.
DBWNV-Bienheim Reef.

An addition to the Countries List is Farquhar, Farquhar, formerly one of the Seychelles, is now one of the Islands making up the British Indian Ocean Territory. Contacts made with Amateur stations on Farquhar, November 19, 1967, are listed as being made separate from the rest of the Seychelles.

SILENT KEYS

It is with deep regret that we record the passing of the following Amateurs:

VK2SE-Bert Wright.
VK3ACD-Air Gillin.
VK2CDG-J. Rich-Phillips.
VK3NB-A. F. Nickson.
VK3TI-Charles Godden.

NEW AWARDS MANAGER

The Federal Awards Manager is now Geoff Wilson, VK1AMN, and any applications for DXCC, VHFCC, WAS (VHF), or WAVECA should be sent to him direct at:-

1 Norman Avenue,
Frankston, Vic. 3162.

DXCC listing changes should also be forwarded to the same address.

Sufficient postage to cover return of cards must be enclosed with application.

.....

NEW SOUTH WALES

FEBRUARY MONTHLY MEETING

The meeting was held at Wireless Institute Centre on the 13rd and was opened by President-Chairman, Keith Finney, VK6KJ. After the usual formality of reading the previous minutes new members were admitted and approved and welcomed to the W.I.A.

President Keith then gave the customary report of Council activity in which he drew attention to the renovations to the building and the re-accrual of the 1967-68 Impressive.

Continuing, Keith drew members' attention to the Conventions being held over Easter and appealed to members to attend and assist the Division and the W.I.A. to make this historic event a complete success. He went on to mention the new Handbook of Regulations now available from the Division Office, the M.G. and the Equipment Store. Keith concluded by saying that ALL members should have a copy and it is highly recommended.

Chairman Keith advised that the March meeting would be the Annual General Meeting and election of Council would take place then. The election should also be at the April meeting as announced earlier.

The March meeting would also contain the Annual Report of Council and Keith answers to some pertinent items and current questions would be given. A clear statement of the Council's policy would be given with recommendations for the incoming Council.

Concluding the report, Keith advised that renewals of subs. were over 800 already and that new subs. arriving at the rate of 50 a day. By the way, if you sent yours in 50 a day.

Four lectures were the evening's entertainment, the first on early Gramophones complete with a demonstration was given by Ivan Agar, VK3AJM, the second on Antennas by Hans Ruckert, VK3AGU, proved very interesting. The third was a description with lantern slides of the team of Burroft and Molen on going to a mountain for the National Field Day. The trials, tribulations and joy in such an extreme task, the audience's caution of mountain operation, but no doubt interested in going mobile, portable, etc.

The fourth was given by Sid Molen on "getting back 93 per cent. of QSL cards". Quite a humorous talk, supported by verse, no actual proof of the method doubtful, in it was presented. There will be no lecture at the March meeting and the April lecture was not confirmed at the time of writing. A visitor to the meeting was Mr. L.W.E. of Seattle, on R. & R. leave after having been wounded in Vietnam. Al told many stories of that which can only be described as incredible. Charlie VK2ZDZ was over at the Gosford field day where he was well taken care of Amateur style. 73, Stan VK2ZRD.

HUNTER BRANCH

In the usual true democratic fashion, the annual election of officers of the Branch was held on Friday, 1st March, when a small but enthusiastic audience was present. The Divisional President, Keith KJ, was there to see that no unworthy practices took place and, since the whole process was covered at a matter of less time than it takes to write it down, he could hardly do otherwise. The Patron, of course, was Frank KJ, but he has been a considerable resource in the other positions. The President this time is Rodney ZKN and it is indeed good to see a new member in the executive. The other President, Frank ZZPX, was also good a good job in organisation of both committee and general meetings during the year. He has vowed to continue in the top place, but he has agreed to continue in the vice-presidential

Page 22

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6CO6—20 cents ea. or 6 for \$1.

VR150/30—75 cents ea. or 3 for \$2.

VR105/30—75 cents ea. or 3 for \$2.

QB2/250 (813)—\$7 ea.

TZ40—75 cents ea.

6H6 (Metal)—20 cents ea.

DM71 (Indicator Tube)—40c ea. or 6 for \$2.

● TRANSISTORS

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● STAR SR700 SSB AMATEUR BAND RECEIVER

Frequency coverage: 3.4-29.7 Mc. in 7 bands. Triple conversion, employs xtal locked 1st and 3rd conversion oscillators. Selectable USB or LSB. Selectivity variable, 0.5 Kc. to 4 Kc. 1 Kc. dial calibration. Three stages double locked geared dial mechanism, 30 Kc. per turn tuning rate. Vackar oscillator employed in VFO for maximum stability.

Price **\$461.50.**

● A111 9 Mc. SSB EXCITER

A fibre-glass printed circuit board, the finest German crystal filter, diode ring modulator, and solid state circuitry all contribute to make the A111 the finest SSB Exciter available. Specifications: Sideband suppression, 80 db.; carrier sup., 65 db.; audio freq. response, 350 to 3,000 cycles; mic. input, 1 mV. on 5K ohm load. Incorporates VOX amplifier and relay amplifier.

Price with KVG XF9B Filter, **\$120.**

● A112 5 Mc. VFO

Frequency coverage: 4950 to 5550 Kc. Frequency stability better than 100 c/s. over 12 hours long term; better than 8 c/s. over 10 minutes if enclosed in suitable box. Output: 350 mV. on 220 ohm load.

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- ★ VFO dial readout of 1 kc.
- ★ Provision for external VFO for split frequency operation, plus built-in four crystal locked channel facility.
- ★ Adjustable VFO tuning knob tension.
- ★ Fast and slow selectable receiver AGC.
- ★ All plugs, circuit and instruction manual provided.
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- ★ Superbly neat construction, very accessible for servicing.
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